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EXAMINER	
NGUYEN, NAM V	

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2635	9

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/588,997	Applicant(s) CARRENDER ET AL.	
	Examiner Nam V Nguyen	Art Unit 2635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-31 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-31 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:.

DETAILED ACTION

This communication is in response to applicant's response to amendment B which is filed September 22, 2003.

An amendment to the claims 1, 4, 6-7, 9-10, 12-14, 16-17, 19-23, 25 and 27-28 have been entered and made of record in the application of Carrender et al. for a "phase modulation in RF tag" filed June 6, 2000.

The new set of claims 29-31 are introduced

Claims 1-31 are pending.

Response to Arguments

In view of applicant's amendment to amend the claims 20 and 22 to obviate the §112 rejections, therefore, examiner has withdrawn the rejection under 35 U.S.C §112, second paragraph.

Applicant's amendments and argument to the rejected claims are insufficient to distinguish the claimed invention from the cited prior arts or overcome the rejection of said claims under 35 U.S.C § 103(a) as discussed below. Applicant's amendment and argument with respect to the pending claims 1-28, filed September 22, 2003, have been fully considered but they are not persuasive for at least the following reasons.

On page 9, last paragraph, Applicant's amendment and arguments with respect to the invention in Hirata et al. does not teach or suggest that a transponder is configured to return a backscatter response of a substantially constant power level is not persuasive.

Hirata et al. teach that a modulator C1 is designed as a phase modulator for changing a signal phase between 90 degree and –90 degree (column 5 lines 41 to 50; see Figure 1). In general, the loss in the modulator C1 increases as the conductance of the modulator C1 increases. In addition, the ratio of an electric power radiated from the antenna B1 to an electric power received by the antenna B1 increases as the susceptance of the modulator C1 increases. Thus, the modulator C1 is preferably designed as a phase modulator having a very small conductance and a moderate susceptance (a susceptance not excessively large). In the case where the impedance of the modulator C1 is equal or very close to 0, the conductance or the susceptance of the modulator C1 is extremely large. Thus, the impedance of the modulator C1 is preferably set to a value appreciably separate from 0. The modulator C1 may be designed as a phase modulator for changing a signal phase between 45 degree and –45 degree or a phase modulator for changing a signal phase between 120 degree and 0 degree (column 6 lines 6 to 24; see Figure 3). Therefore the phase modulator C1 is only changing the phase but not an amplitude.

Furthermore, Haruyama et al. disclose that a responder 30 also comprises an antenna 35 for receiving the energy wave transmitted from the circularly polarized wave antenna 14 of the interrogator 10. The energy wave received by the antenna 35 and serving as a carrier wave for the response signal wave is supplied to a phase modulator 36, and is phase-modulated by a response signal output from the microprocessor or the like. The phase-modulated signal is sent back again from the antenna 35 toward the interrogator 10 as a response signal wave. Upon

modulation by the phase modulator 36, a harmonic component is generated as if it was amplitude-modulated by the response signal, and is also radiated from the antenna 35 as a harmonic signal wave (column 4 lines 6 to 19; see Figure 5). One skilled in the art understands that constant power transmission can be achieved by modulating either the frequency or the phase of a carrier wave. Of these two modulation alternatives, phase modulation is far preferable for constant power level in communication systems because of its greater bandwidth efficiency. The reason for this greater bandwidth efficiency can be readily understood by considering the operation of a frequency or phase modulation system. Therefore, Hirata et al. and Haruyama et al. disclose that a transponder is configured to return a backscatter response of a substantially constant power level.

On page 12, first paragraph, Applicant's arguments that there is no motivation to couple the switch of Hirata et al. to the microstrip line of Haruyama is not persuasive.

In response to Applicant's argument that there is no suggestion to combine the references, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. *In re Nomiya*, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971).

Hirata et al. teach that a transistor 61 forms a switching element. The base of the transistor 61 is connected to the terminal P3. The emitter of the transistor 61 is connected to a junction J1 between the terminal P1 and the diode 63. The collector of the transistor 61 is connected via a resistor 62 to a junction J2 between the diode 63 and the terminal P2. The emitter-collector path of the transistor 61 and the resistor 62 compose a bypass circuit for the diode 63. A large part of a received interrogation signal S1 advances from the antenna B1 (see FIG. 1) into the diode 63 via the terminal P1, being rectified by the diode 63 and being smoothed by the smoothing capacitor 64 into a dc power. The dc power is fed via the terminal P2 to the identification code generator D (see FIG. 1) to activate the latter. When activated, the identification code generator D outputs an identification information signal which is applied to the base of the transistor 61 via the terminal P3. The transistor 61 changes between an on state and an off state in response to the identification information signal so that the bypass circuit for the diode 63 is closed and opened in response to the identification information signal. Thus, operating conditions of the diode 63 are changed in response to the identification information signal. Therefore, the characteristics of the reflection of the interrogation signal S1 at the modulation/rectification complex circuit C vary in response to the identification information signal. As a result, a part of the interrogation signal S1 is modulated with the identification information signal and is thus converted into a reply signal S2 containing the identification information, and the reply signal S2 is reflected and returned toward the antenna B1 (see FIG. 1) via the terminal P1 (column 6 lines 47 to column 7 line 28; see Figure 5).

Haruyama et al. disclose that a rectangular microstrip resonator 1 whose one side has a length corresponding to 1/2 a wavelength of a microwave to be received is arranged on a low-

dielectric substrate (not shown) on the lower surface of which a ground plate is disposed. A microstrip line 2 having a length larger than the 1/2 wavelength is connected to the central portion of the one side of the resonator 1. A short-circuiting stub 4 is connected through a transistor 3 to a position of the microstrip line 2 corresponding to the 1/2 wavelength from its free end, so that an ON/OFF state of the transistor 3 is switched in response to a response signal (column 1 lines 38 to 62; see Figure 9). Haruyama continuous disclose that, when the transistor 3 is OFF, a microwave received by the microstrip resonator 1 is reflected by the free end of the microstrip line 2 and is radiated again from the microstrip resonator 1. When the transistor 3 is ON, the microstrip line 2 is, in effect, short-circuited at the position where the transistor 3 is connected. The microwave is reflected at this position, and is radiated again from the microstrip resonator 1 while the phase of the microwave is shifted by 90 degree. In this manner, the effective length of the microstrip line for reflecting the received microwave is switched by a response signal, and the received microwave is phase-modulated and is sent back as a response signal (column 1 lines 38 to 62; see Figure 9). Therefore, one skilled in the art of phase modulator understands that connecting a stub to a terminal of a switch response to a response signal with a corresponding wavelength.

Page 12, second paragraph, Applicant's arguments with respect to the invention in Hirata et al. in view of Haruyama does not teach or suggest a quarter-wavelength stub is not persuasive.

Hirata et al. in view of Haruyama et al. disclose the transponder of claims 1, 17 and 25 as discuss above. Hirata et al. disclose wherein the stub (184) is a quarter-wavelength stub (column 13 lines 48 to 56; see Figure 15);

Page 12, third paragraph to page 13, first paragraph, Applicant's arguments with respect to the invention in Hirata et al. in view of Haruyama does not teach or suggest the claims 4-5, 12, 20 and 27 is not rendered obvious is not persuasive.

Hirata et al. teach a responder B includes an antenna B1. An interrogation signal S1 induced in the antenna B1 is fed via a terminal P1 to a modulator C1 and a rectifier C2 within a modulation/rectification complex circuit C. The terminal P1 leads to the modulator C1 and the rectifier C2 via a junction or a branch point J0. A part of the interrogation signal S1 is accepted by the rectifier C2, and is rectified by the rectifier C2 into dc power. The output dc power from the rectifier C2 is fed via a terminal P2 to an identification code generator D to activate the latter. The identification code generator D includes a memory for storing identification information. The identification code generator D generates an identification code signal on the basis of the identification information read out from the memory. The identification code signal is fed from the identification code generator D to the modulator C1 via a terminal P3 as a modulating signal. Another part of the interrogation signal S1 is accepted by the modulator C1, and is modulated with the identification code signal by the modulator C1 so that the part of the interrogation signal S1 is converted into a reply signal S2 including the identification information. The modulator C1 reflects and returns the reply signal S2, and the reply signal S2 is fed back to the antenna B1 via the terminal P1. The reply signal S2 is radiated from the antenna B1 (column 3 lines 45 to column 4 line 3; see Figure 1).

Hirata et al. continuous to disclose that the code generator D includes a CPU 1130 to drive the response signal and a memory 1140 for storing identification information. The CPU

1130 coupled directly to a memory 1140. The identification code generator D is triggered by the control signal, generating an identification code signal on the basis of the identification information read out from the memory. The identification code signal is fed from the identification code generator D to the modulator (see Figure 17). Therefore, one skilled in the art recognizes that the phase modulator including a diode coupled to the antenna and the CPU coupled between the memory and the diode to produce a modulating signal corresponding to the information code.

On page 13, second paragraph, Applicant's arguments with respect to the invention in Hirata et al. does not teach or suggest that the claims 6, 13 and 22 are not anticipated by Hirata et al. is not persuasive.

Hirata et al. teach that a second diode (190) having two terminals. The first terminal connects to an antenna (B1) and the second terminal connects to a stub (184) and the parallel RC circuit (186 and 185) (column 13 lines 48 to 62; see Figure 15). As show in Figures 1-5, the modulator (C) has a first diode which has one terminal connect to the antenna (B1) and the other diode connect to the code generator (D). As discuss claim 4 above, one of ordinary skilled in the art understands that the signal is coming in at the terminal (31) and data process in the counter (35) and transfer to the memory (36) and output the signal to the terminal (32) (see Figure 2). Hirata et al. disclose that the CPU (1130) connects between the RAM (1140) and the modulator (D) (see Figure 17). As show in Figures 3 to 13, the modulator (C) has many preferred embodiments which connect to the code generator (D). The modulator has a diode (53 or 63 in

Figure 4 and 5) that connects to code generator (D). Therefore, the processor (36) connects between the memory (36) and a diode (53).

On page 13, third paragraph, Applicant's arguments with respect to the invention in Beccone et al. does not teach or suggest that a responder is a backscatter is not persuasive.

Hirata et al. teach that the interrogator A transmits the interrogation signal S1 into a predetermined area. The responder B on the movable object within the predetermined area receives the interrogation signal S1 and transmits the reply signal S2. The interrogator A receives the reply signal S2 and demodulates the identification information from the received reply signal S2. The interrogator A identifies the movable object by referring to the demodulated identification information (column 3 lines 22 to 30; see Figure 1). The responder B is a phase modulator for changing signal phases. Beccone et al., in the same field of endeavor of multiphase modulator, teach a multiphase modulator is provided by directing a microwave carrier into the first port of a circulator, reflecting it from variable locations of a reflecting transmission line connected to the second port, and directing it from the third port to a load. By selectively switching diodes, one directly connected, and one capacitively connected, to the reflecting line, four-level phase digital modulation is obtained. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to add the multiphase digital modulator of Beccone et al. in phase changer of the phase modulator of Hirata et al. in view of Haruyama et al. with the motivation for doing so would have been to produces a multiphase response signal that is transmitted back from the backscatter transponder to the interrogator.

On page 13 last paragraph to page 14, Applicant's arguments with respect to the invention in Entschladen et al. does not teach or suggest that a responder is a backscatter is not persuasive.

Entschladen et al. teach that the cathode of the first diode (i.e. D2) being coupled to the antenna (1), the anode of the second diode (i.e. D1) being coupled to the antenna 1 structure and also being coupled to the cathode of the first diode (column 2 lines 60 to column 3 lines 15; see Figures 1 and 2) in order to rectify and to double the voltage in connection with capacities. Furthermore, Entschladen et al. disclose that in order to transmit various microwave signals of different frequencies, polarization and modulation, several separate receiving antennas must be provided. This is required particularly if, for example, a strong, unmodulated HF signal and a weak information signal are to be transmitted. In addition, there are difficulties in the compulsory rectifier/detector demodulation circuit. Due to the intense range of modulation of the receiver diode due to the strong, unmodulated HF signal, the sensitivity of the input circuit for a weak, modulated signal is reduced, so that an increase in the level would be required for the modulated signal (column 1 lines 45 to 56).

At the time the invention, it would have been obvious to a person of ordinary skill in the art to recognize an alternative way to connect the cathode of the first diode to an antenna of Entschladen et al. in the first diode of a backscatter phase modulator of Hirata et al. because a diode with the cathode connected to an antenna would generate a high output operating voltage of the circuit in order to improve reliable of detection circuitry that has been shown to be desirable in the backscatter phase modulator of Hirata et al.

The examiner maintains that the references cited and applied in the last office actions for the rejection of the claims are maintained in this office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 9-11, 16-18 and 24-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring to claims 1, 9-10, 16-18 and 24-26, the limitation that "having a length other than a wavelength of the interrogation signal" is not support in the specification.

Referring to claims 2-3 and 11 are rejected as being dependent upon a rejected claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 10-12, 14, 17-22 and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al. (US# 5,247,305) in view of Haruyama et al. (US# 5,119,099).

Referring to claims 1, 17 and 25, Hirata et al. disclose responder in movable-object identification system as recited in claims 1, 17, and 25. See Figures 1, 14 and respective portions of the apparatus and method.

Hirata et al. disclose a radio frequency transponder (B) (column 1 lines 50 to 60; see Figure 1), comprising:

An antenna (B1) for receiving an interrogation signal (column 3 lines 46 to 50);

A memory (36; see Figure 2) that stores an information code (column 3 lines 56 to 63; column 4 lines 4 to 9); and

A phase modulator (C) comprising:

A switch (61) (i.e. transistor; see Figure 5) having a control terminal (P3) and first (P1) and second conduction terminals (P2) (column 6 lines 44 to 49), the first conduction terminal (P1) being coupled to the antenna (B1) (column 6 lines 49 to 50; See Figure 1); and

a driver (D) coupled between the memory (36) and the control terminal (P3) of the switch (61), wherein the transponder (B) is configured to return a backscatter response of a substantially constant power level (column 7 lines 9 to 12; column 7 lines 12 to 18; see Figure 2).

However, Hirata et al. did not explicitly disclose that a stub coupled to the second conduction terminal of the switch. Hirata et al. disclose that the second conduction terminal of the switch (61) connected to a load resistor (62) to modulate and a stub (184) coupled to the second conduction terminal (P2) of the switch (190) (i.e. a diode) (column 13 lines 48 to 56; see Figures 14 and 15) in order to have a quarter wavelength of the handled RF electric power.

In the same field of endeavor of responder in identification system, Haruyama et al. teaches that a stub (4) coupled to the second conduction terminal (i.e. the Source terminal) of the switch (3) (i.e. a FET switch) (column 1 lines 38 to 62; see Figure 9) in order to shift the phase of the responder.

One of ordinary skilled in the art understands that connecting a stub to a conduction terminal of a FET switch of Haruyama et al. in the conduction terminal that connect to a load resistor of the switch of Hirata et al. because a stub that is connected to a source terminal of a FET switch would change the phase of the modulator to a fix wavelength when the FET switch is ON that has been shown to be desirable in the phase modulator of the responder in a movable object identification system of Hirata et al.

Referring to claims 2, 18 and 26, Hirata et al. in view of Haruyama et al. disclose the transponder of claims 1, 17 and 25, Hirata et al. disclose wherein the stub (184) is a quarter-wavelength stub (column 13 lines 48 to 56; see Figure 15);

Referring to claim 3, 19 and 21, Hirata et al. in view of Haruyama et al. disclose the transponder of claims 1, 17 and 20, Hirata et al. disclose wherein the driver (D) includes a microprocessor (1130) (column 14 lines 62 to 64; see Figure 17).

Referring to claims 4, 12, 20, 27 and 29, Hirata et al. in view of Haruyama et al. disclose, to the extent of claim 1 above, Hirata et al. disclose a method and a phase modulator (B) having: a diode (53; see Figure 4) coupled to the antenna (B1) and a driver (1130) (i.e. a microprocessor; see Figure 17) coupled between the memory (1140) and the diode (53), the driver (1130) being structured to produce a modulating signal corresponding to the information code (column 7 lines 9 to 12), the modulating signal being a variable voltage that modulates a capacitance of the diode (63) to phase modulate the interrogation signal (S1) and thereby produce the response signal (S2) having a substantially constant power level (column 7 lines 38 to 40; column 9 line 58 to column 10 line 7).

Referring to claim 5, Hirata et al. in view of Haruyama et al. disclose the transponder of claim 4, Hirata et al. disclose wherein the driver (D) includes a microprocessor (1130) (column 14 lines 62 to 64; see Figure 17).

Referring to claims 6 and 22, Hirata et al. in view of Haruyama et al. disclose, to the extent of claims 1 and 20 above, Hirata et al. disclose a phase modulator (B) having:

A first diode (71; column 8 lines 10 to 16; see Figure 6) having first (P3) and second ends (J3), the second end being coupled to the antenna (B1) (see Figure 1);

A second diode (73; column 8 lines 3 to 10) having first (J3) and second ends (P2); the first end (J3) being coupled to the antenna (B1) and the second end of the first diode (71);

A quarter-wavelength stub (184; see Figure 15) coupled to the second end of the second diode (190) (column 13 lines 48 to 56);

A parallel RC circuit (185 and 186) coupled between the stub (184) and a reference voltage (i.e. Ground) (column 13 lines 48 to 62; see Figure 15); and

a driver (D) coupled between the memory (1140; see Figure 17) and the first end (P3) of the first diode (71), the driver (D) being structured to produce a modulating signal corresponding to the information code, the transponder configured to return a backscatter response signal having a substantially constant power level (column 7 lines 9 to 12).

Referring to claims 7 and 30, Hirata et al. in view of Haruyama et al. disclose, to the extent of claim 1 above, Hirata et al. disclose wherein the phase modulator (C) is structured to include in the response signal (S2) having a substantially constant power level according to the information code, the response signal containing a plurality of phases (i.e. phase different) in addition to a phase that is substantially identical to a phase of the interrogation signal (S1) (column 5 lines 46 to 66).

Referring to claim 10, Hirata et al. in view of Haruyama et al. disclose a radio frequency communication system (column 3 lines 4 to 10; see Figure 1), comprising:

An interrogator (A) that transmits a radio frequency interrogation signal (S1) and receives a backscatter response signal (S2) (column 3 lines 11 to 21);

A transponder (B) (column 3 lines 46 to 50) that receives the interrogation signal (S1) and returns the backscatter response signal to the interrogator (S2), the response signal having a substantially constant power level (column 3 lines 61 to 68), the transponder (B) includes to the extent as claimed with respect to claims 1 and 4 above..

Referring to claim 11, Hirata et al. in view of Haruyama et al. disclose the transponder of claim 10, Hirata et al. disclose wherein the stub (184) is a quarter-wavelength stub (column 13 lines 48 to 56; see Figure 15);

Referring to claims 14 and 28, Hirata et al. in view of Haruyama et al. disclose the transponder to the extent of claim 10 above, Hirata et al. disclose the phase modulator (C) structured to include in the response signal (S2) a plurality of phases (i.e. phase different) in addition to a phase that is substantially identical to a phase of the interrogation signal (S1) (column 5 lines 46 to 66).

Claims 8-9, 15-16, 23-24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al. (US# 5,247,305) in view of Haruyama et al. (US# 5,119,009) as applied to claims 4, 7 and 25 above, or in the alternative to the extent of claim 20, and in view of Beccone et al. (US# 3,656,069).

Referring to claims 8-9, 15-16, 23-24 and 31, Hirata et al. in view of Haruyama et al. disclose a method and a responder in a movable-object identification system of claims 4, 7 and 25, however, Hirata et al. did not explicitly disclose the method and the phase modulator includes a first, a second and a third phase changers that produces in the response signal respective first, second and third phases that are each different than a phase of the interrogation signal, each of the phase changers include a switch coupled between the antenna and a stub having a length other than a wavelength of the interrogation signal.

In the same field of endeavor of multiphase digital modulator, Beccone et al. teach that the phase modulator (see Figure 1) includes a first (i.e. carrier source original phase), a second (A) and a third phase changers (C) that produces in the response signal respective first (0 degree), second (225 degree) and third phases (90 degree) that are each different than a phase of the interrogation signal (zero degree reference), each of the phase changers include a switch (17 or 19) coupled between the antenna (15) and a stub having a length (A to B and A to C) other than a wavelength of the interrogation signal (column 3 lines 43 to column 4 lines 10) in order to obtain the best multi-phase modulation transmission strategy for transmitting backscatter signal.

One of ordinary skilled in the art recognizes the need to add the multiphase digital modulator of Beccone et al. in phase changer of the phase modulator of Hirata et al. in view of Haruyama et al. because Hirata et al. suggest it is desired to change a signal phase between 90 degree to –90 degree or to change to different phases range (column 5 lines 46 to 50; column 6 lines 16 to 20 to 24) and Beccone et al. teach that providing first, second, and third diodes along the reflecting transmission line, each for short-circuiting the reflecting transmission line when actuated and actuated each of the phase by individual switches (column 1 lines 6 to 65) in order

to provide four-level phase modulation to minimize the likelihood of faulty discrimination. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to add the multiphase digital modulator of Beccone et al. in phase changer of the phase modulator of Hirata et al. in view of Haruyama et al. with the motivation for doing so would have been to produces a multiphase response signal that is transmitted back from the radio frequency transponder to the interrogator.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al. (US# 5,247,305) in view of Entschladen et al. (US# 4,918,749).

Referring to claim 13, Hirata et al. disclose a radio frequency communication system, to the extent of claim 6 above, the transponder further includes:

A first diode (183; column 8 lines 10 to 16; see Figures 15 and 20) having an anode and a cathode (see Figure 1);

A second diode (73; column 8 lines 3 to 10) having an anode (J3) and a cathode (P2), the anode of the second diode being coupled to the antenna (B1) and to the cathode of the first diode.

However, Hirata et al. did not explicitly disclose the cathode of the first diode being coupled to the antenna (B1). Hirata et al. disclose the anode of the first diode being coupled to the antenna (B1).

In the same field of endeavor of receiving circuitry, Entschladen et al. teach that the cathode of the first diode (i.e. D2) being coupled to the antenna (1) (column 2 lines 60 to

column 3 lines 15; see Figures 1 and 2) in order to rectify and to double the voltage in connection with capacities.

At the time the invention, it would have been obvious to a person of ordinary skill in the art to recognize an alternative way to connect the first diode to an antenna by the cathode being coupled to the antenna of Entschladen et al. in the first diode of Hirata et al. because a diode with the cathode connected to an antenna would generate a high output operating voltage of the circuit in order to improve reliable of detection circuitry that has been shown to be desirable in the receiver circuitry of Hirata et al.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nam V Nguyen whose telephone number is 703-305-3867. The examiner can normally be reached on Mon-Fri, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached on 703-305-4704. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Nam Nguyen
December 15, 2003

BRIAN ZIMMERMAN
PRIMARY EXAMINER